

## REVISION OF THE GENUS *CHAMPAKA* (HOMOPTERA, CICADIDAE) FROM BORNEO AND SULAWESI

Duffels, J. P., 1991. Revision of the genus *Champaka* (Homoptera, Cicadidae) from Borneo and Sulawesi. – *Tijdschrift voor Entomologie* 134: 177-182, figs. 1-7. [ISSN 0040-7496]. Published 18 December 1991.

The genus *Champaka* and its species are redescribed. The genus includes *C. celebensis* (= *C. maculipennis* syn. n.) from NW Sulawesi and *C. viridimaculata* (= *C. harveyi* syn. n.), a widespread species in Borneo. Lectotypes are designated. The relationships of *Champaka* are discussed.

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During our ongoing studies of the cicadas of Sulawesi, we have noted that the cicada-fauna of this island is highly endemic and a mixture of taxa with Oriental and Australian relationships (Duffels 1990). The cicada genus *Champaka* Distant, 1905, revised in the present paper, has Oriental affinities. The distribution of the genus reflects a biogeographic coherence between Sulawesi and Borneo.

The genus *Champaka* was erected by Distant (1905) for *Pomponia viridimaculata* Distant, 1889, from North Borneo, which is thus the type-species by monotypy. Later, the same author added two other species to the genus, viz., *Champaka harveyi* Distant, 1912 from Borneo and *Champaka celebensis* Distant, 1913 from Celebes [= Sulawesi]. Some years later Haupt (1917) described *Champaka maculipennis* from Celebes. The present study reveals the synonymy of the types from Borneo, as well as those from Sulawesi.

### DEPOSITORIES

Abbreviations for depositories of material used in this paper: Natural History Museum (formerly: British Museum (Natural History)), London, United Kingdom (BMNH); California Academy of Sciences, Department of Entomology, San Francisco, USA (CAS); Deutsches Entomologisches Institut, Eberswalde, Germany (DEI); National Museum of Natural History (formerly: Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands (RMNH); private collection Professor Dr. H. J. Müller, Jena, Germany, containing H. Haupt's

Homoptera collection (Coll. Müller) and Institute of Taxonomic Zoology (Zoological Museum), University of Amsterdam, The Netherlands (ZMA).

### TAXONOMY

The references to the genus and the species are a selection of the most relevant literature; further references can be obtained from the catalogues by Metcalf (1962, 1963) and Duffels & Van der Laan (1985).

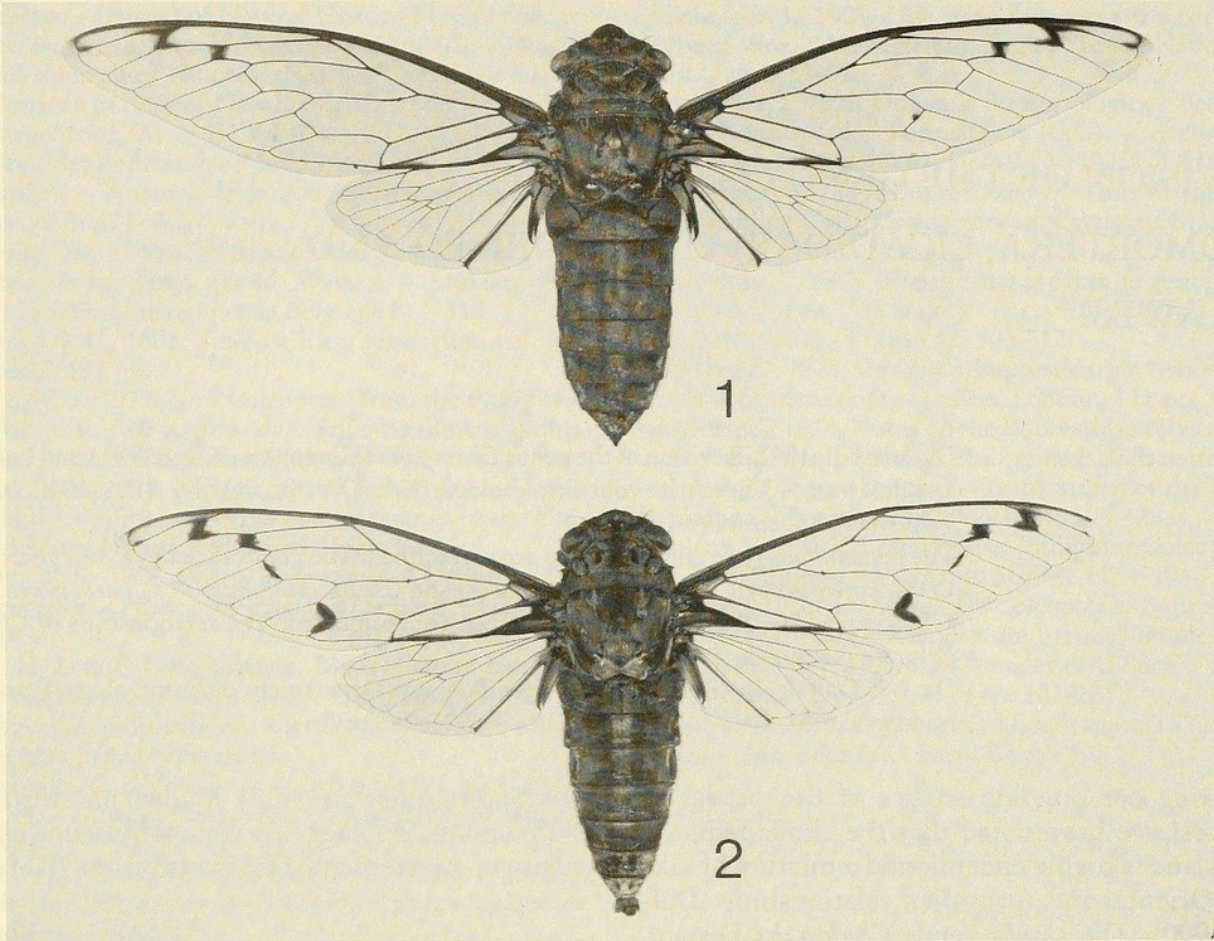
### *Champaka* Distant

*Champaka* Distant, 1905: 60, 70. – Distant 1906: 49, 71; Distant 1912: 39, 56; Moulton 1923: 82, 116, 166. – Type-species by monotypy: *Champaka viridimaculata* (Distant, 1889).

Diagnosis. – Postclypeus globular. Head considerably broader than mesonotum. Head about as long as wide between eyes. Male abdomen considerably longer than head and thorax together. Lateral margins of pronotum amplified and distinctly toothed at midlength. Male operculum triangular, short, reaching just beyond anterior margin of abdominal segment 3 or to half-length this segment. Greatest width of tegmen less than a third of its length.

Characterization of the genus *Champaka* by synapomorphies must await phylogenetic analysis of the characters of the species of *Champaka* and related genera. The combination of the elongate body-shape and the short opercula of the male





Figs. 1-2. *Chompaka* ssp., habitus, males. – 1, *C. viridimaculata*, Brunei, Badas; 2, *C. celebensis*, Sulawesi, Palu, 1985.

traditionally separates *Chompaka* from other genera. The *Chompaka* species resemble *Platylomia spinosa* (Fabricius, 1787) and related species in the relatively long abdomen, the broad head and the similar body colour and marking, in spite of the long male operculum of these *Platylomia* species. The structure of the male genitalia is like those found in *Platylomia* and other related genera.

**Key to the species of *Chompaka***

- 1. Tegmen with infuscations at bases of 2nd, 3rd, 5th and 7th apical areas and along posterior longitudinal vein of 7th apical area. Male operculum as in fig. 5 and reaching to half length abdominal segment 3 or to almost posterior margin of this segment. Male genitalia as in fig. 3 (Sulawesi) ..... *C. celebensis* Distant
- Tegmen with infuscations at bases of 2nd and 3rd apical areas. Male operculum as in fig. 6 and reaching just beyond posterior margin of abdominal segment 2. Male genitalia as in fig. 4 (Borneo) ..... *C. viridimaculata* (Distant)

***Chompaka celebensis* Distant**  
(figs. 2, 3, 5, 7)

*Chompaka celebensis* Distant, 1913: 80. – Lectotype ♂

[here designated]: 'N.W.Celebes / (de Giacomi)' [handwritten], 'Chompaka / celebensis / Dist. type' [Distant's writing], 'Type' [print; red margined label], 'Distant coll. / 1911-383' [print] (BMNH) [examined].  
*Chompaka maculipennis* Haupt, 1917: 305. – Lectotype ♂ [here designated]: 'Paloe / N. W. Celebes', 'Chompaka ♂ / maculipennis Hpt' (Collection Müller) (syn. n.) [examined].

Other material examined: 1 ♂ paralectotype *Chompaka celebensis*, N.W. Celebes, de Giacomi, Distant coll. 1911-383 (BMNH); 2 ♂, Paloe, N. W. Celebes, A. Heyne, *Chompaka bellicosa* Mel. (manuscript name) (DEI). These two specimens may belong to the type series of *Chompaka maculipennis*, which consists of four males from Palu collected by A. Heyne, but the absence of Haupt's identification labels and the presence of the label with Melichar's manuscript name refrain me from labelling these specimens paralectotype; 1 ♂, Sulawesi, Palu, 27.xi.1985, at light, J. van Tol (RMNH).

**Description of the male**

Ground colour of body brown; ground colour of dorsal surface of head, pronotum and lateral parts of mesonotum olive-green in the specimen collected in 1985. Head and thorax silvery pilose with exception of mediodorsal part of pronotum, dorsal surface of pronotal collar and greater part of me-



sonotum disk; abdomen dorsally with scattered silvery pilosity in a median and two lateral bands. Underside of body somewhat lighter brown.

Head: Postclypeus for the greater part dark castaneous with medial, oval, greenish spot at anterior margin and light brown lateral parts. A round black spot enclosing the ocelli; three pairs of very small spots are situated laterally of ocelli. Rostrum with dark brown apex passing hind coxae.

Thorax: Pronotum with one broad, dark castaneous, central fascia which widens to the anterior and to the posterior, a pair of juxtaposed or fused, small, black spots in the central fascia just in front of pronotal collar, a pair of fairly large, half-moon shaped, black-brown spots between the two pairs of oblique fissures and two pairs of short, narrow, black-brown lines just above and below proximal ends of posterior oblique fissures. The narrow, black-brown coloration of posterior oblique fissures broadens distally and continues along lateral part of ambient fissure as a fascia of variable width. Pronotal collar laterally with dark suffusion. Mesonotum with vague median fascia, a pair of narrow, black-brown, slightly converging paramedian fasciae reaching to half the mesonotum length, a pair of small, round, black-brown spots in front of cruciform elevation and a pair of very broad lateral fasciae on posterior half or two-thirds of mesonotum. Cruciform elevation lighter than mesonotum disk; anterior arms of cruciform elevation with distinct dark mark.

Tegmina and wings: Hyaline. Venation ochreous to light brown variegated with black-brown; basal cell and extreme basal venation of tegmen of specimen collected in 1985 with light greenish tinge. Tegmina with infuscations around transverse veins at bases of 2nd, 3rd, 5th and 7th apical areas; infuscation at base of 7th apical area extending along posterior vein of this area. Lectotype of *celebensis* with very small, marginal spots at apices of longitudinal veins of tegmina; most of these spots are missing in the other specimens.

Legs: Fore femora black-brown with yellowish basal or middle part; middle and hind femora castaneous brown, middle femora with black-brown anterior line. Tibiae of all legs and tarsi of fore and middle legs castaneous brown (tarsi of hind legs missing).

Operculum (fig. 5): Triangular, light brown, with almost straight lateral and medial margins and a subacutely rounded apex, reaching to half-length abdominal segment 3 or to almost posterior margin of this segment.

Abdomen: Castaneous brown dorsally and light brown ventrally, very long, about 1.4 times as long as head and thorax together. Timbal covering with weakly convex anterior margin and weakly con-

cave lateral margin

Genitalia (fig. 3). Pygofer one and a half times as long as wide; widest at half-length. Both, lateral margins of apical half of pygofer and sides of basal cup of pygofer pronounced. Uncus lobes broad, lateral margins weakly concave, apical margin weakly convex to attenuate laterodistal corner.

Measurements in mm (6 ♂). Body length 49.0-61.0 ( $52.9 \pm 3.8$ ); head width 13.8-15.5 ( $14.5 \pm 0.7$ ); pronotum width 14.7-16.4 ( $15.3 \pm 0.6$ ); tegmen length 55.7-62.5 ( $60.5 \pm 2.3$ ).

#### Distribution (fig. 7)

This species was collected in Palu and in an unknown locality in NW Sulawesi. The specimen from Palu in the RMNH was collected from a window-pane of a restaurant in town in 1985. In spite of rather intensive collecting near Palu and in other areas of Sulawesi in recent years, no more specimens of this species became available.

#### *Chompaka viridimaculata* (Distant)

(figs. 1, 4, 6, 7)

*Pomponia viridimaculata* Distant, 1889: 421. – Lectotype ♂ [here designated] 'Kina Balu / (Whitehead)' [handwritten], 'viridi- / maculata / Dist' [handwritten], 'Type' [print; red margined round label], 'Distant coll. / 1911-383' [print] (BMNH) [examined].

*Pomponia viridimaculata*; Distant 1891: 73, Pl. X, figs. 9, 9a-b; Distant 1892: xii; Breddin 1900: 180.

*Chompaka viridimaculata*; Distant 1905: 66, 70; Distant 1906: 71; Distant 1912: 57, Pl. 6, figs. 49a-c; Distant 1913: 80; Haupt 1917: 306; Moulton 1923: 116, 168.

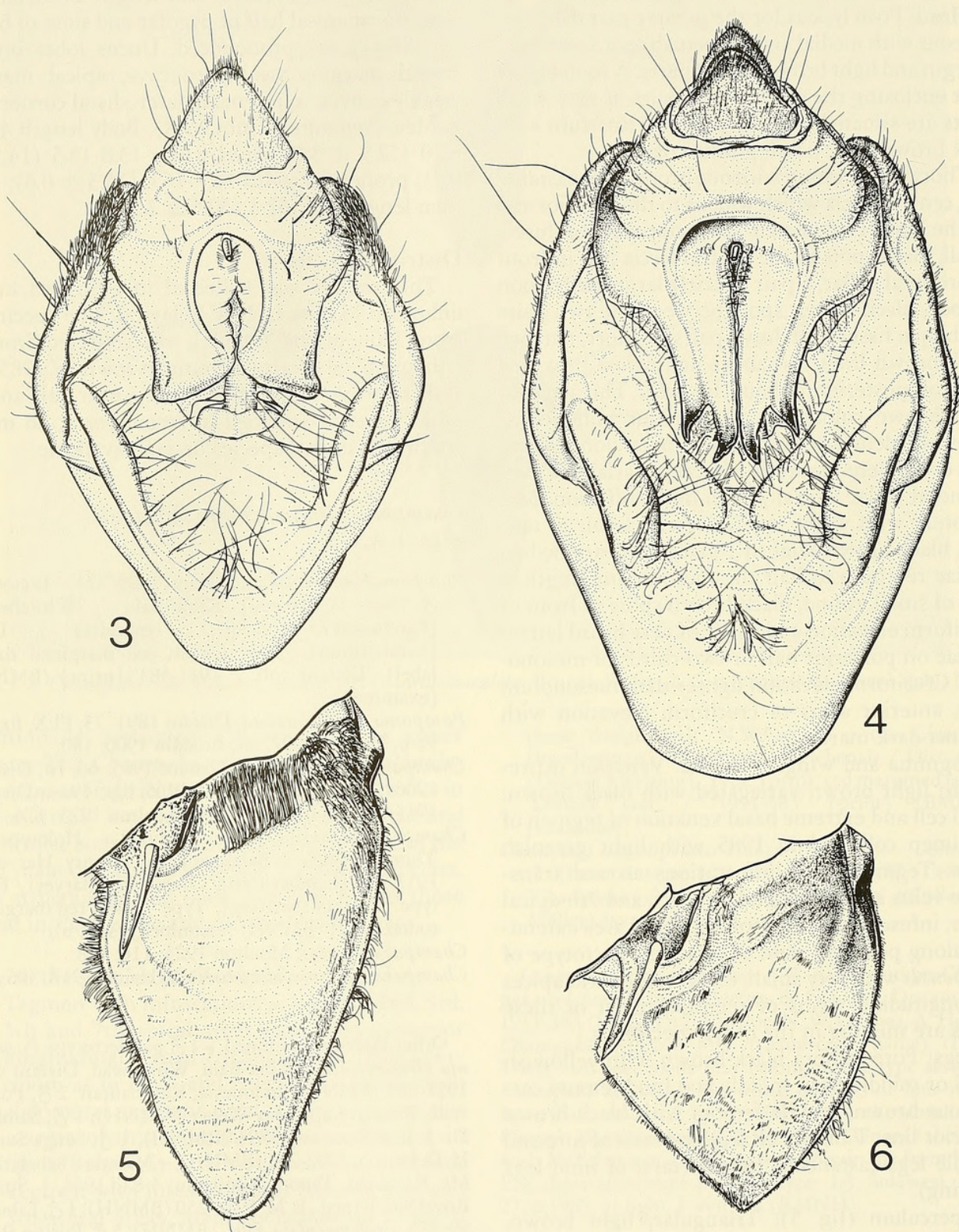
*Chompaka harveyi* Distant, 1912: 57. – Holotype ♂: 'Dutch Borneo / Balakpappan / Henry Harvey / 1912-324' [handwritten], 'Chompaka / harveyi / Dist. type' [Distant's writing], 'Type' [print; red margined round label] (BMNH) [examined] (syn. n.).

*Chompaka harveyi*; Moulton 1923: 116, 168.

*Chompaka viridimaculata harveyi*; Haupt 1917: 306.

Other material examined. – 1 ♂ paralectotype *Pomponia viridimaculata*, Kina Balu, Whitehead, Distant coll. 1911-383 (BMNH). Indonesia, Kalimantan: 2 ♂, Pontianak, Borneo Exp., Max Weber (RMNH); 1 ♂, Sambas, Dr. J. Bosschoo, acq. 1891 (RMNH); 1 ♂, Sanga Sanga, H. D. Jansen, 1907-203 (BMNH). – Malaysia, Sabah: 2 ♂, Mt. Kinabalu, Tenom Keningau, 4-8.iii.1964, J. Smart, Royal Soc. Exped., B. M. 1964-250 (BMNH); 1 ♂, Labuan, 99-279, *viridimaculata*, Dist. (BMNH); 5 ♂, Poring, 9 mi. N. of Ranau, 1600', 26-29.iv.1970, T. W. & M. C. Davies (CAS); 1 ♂, Tawau, 10.iv.1970, G. Mendenhall, coll. T. W. Davies (CAS); 3 ♀, Tawau, Brumas Camp, xi.1974, C. Pruett, B. M. 1975-590 (BMNH); 8 ♀, Sandakan Dist., Rumidi, R. Labuk, 16-30.ix.1973, C. Pruett, B. M. 1975-590 (BMNH). – Malaysia, Sarawak: 1 ♂, Bidi, 1907-1908, C. J. Brooks (BMNH); 2 ♂, Kedurong, Moulton, Distant coll. 1911-383 (BMNH); 4 ♂, Kedurong, iii.1911, J. C. Moulton, 1911-141 (BMNH). – Brunei: 5 ♂, Brunei,





Figs. 3-6. *Champaka* ssp. – 3, Male pygofer in ventral view, *C. celebensis*, Sulawesi, Palu, 1985; 4, Idem, *C. viridimaculata*, Brunei, Badas; 5, Male operculum in ventrolateral view, *C. celebensis*, Sulawesi, Palu, 1985; 6, Idem, *C. viridimaculata*, Brunei, Badas.



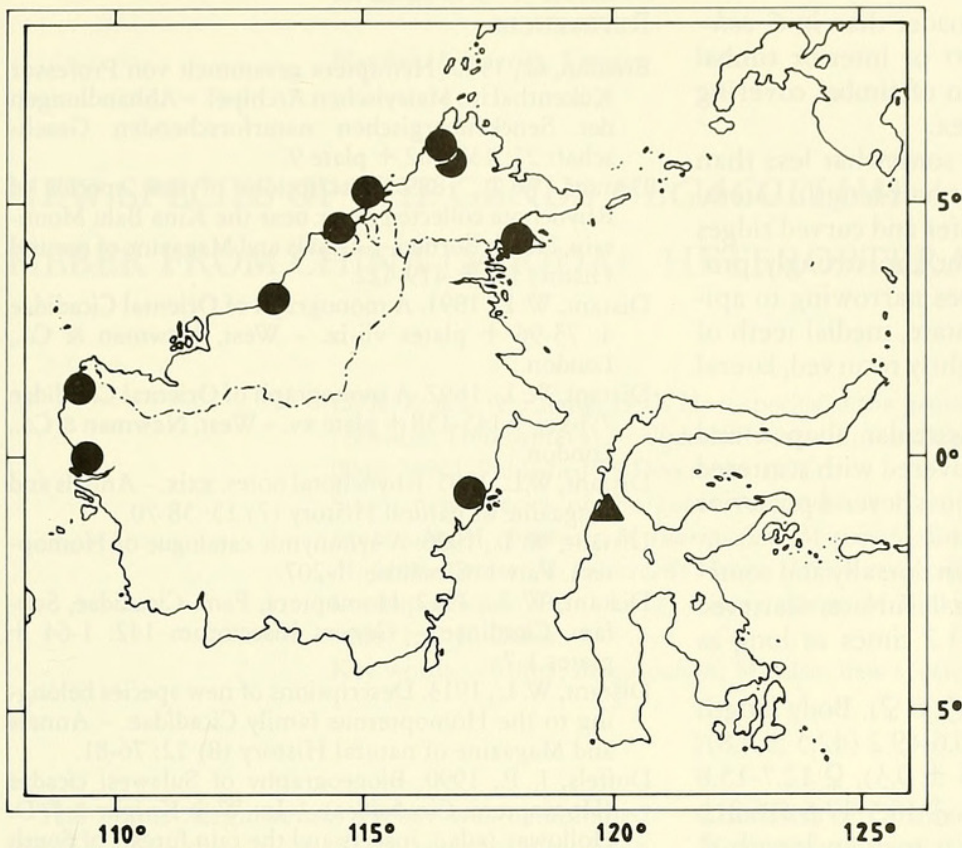


Fig. 7. Distribution of *Chompaka viridimaculata* (black dots) and *Chompaka celebensis* (triangle).

Waterstradt (BMNH); 2 ♂, Brunei, booreiland voor de kust (drilling platform off the coast), acq. 1969, C. Kraenberg (ZMA); 9 ♂, Badas, *Agathis* / swamp forest / secondary vegetation, 27.ii.1982, 50-100', G. S. Robinson, 1982-156 (BMNH); 5 ♂, Rampayoh R. (north), LP 195, lowland forest, 1-3.iii.1982, 100', G. S. Robinson, B M 1982-156 (BMNH); 1 ♂, S. Selanjak, 4464.1432, mangrove, 0 m, 8-9.iii.1984, Maj. T. P. G. Helps, B. M. 1984-296 (BMNH).

### Synonymy

*C. harveyi* was separated from *C. viridimaculata* by the immaculate tegmina, the greyish-white basal membranes of tegmina and wings and the more pointed male operculum. Study of the holotype of *C. harveyi* led to the conclusion that this specimen is an immature *C. viridimaculata*. The holotype of *harveyi* has very faint, but still recognizable spots on the tegmina. White basal membranes in the tegmina and wings are also found in specimens of *C. viridimaculata*. The opercula of *harveyi* seem to be more pointed but this is an artefact due to deformation of the soft body.

### Description

Body brown to dark brown or black-brown with exception of some parts of mesonotum and pronotum collar, which are light brown or lightly greenish tinged; abdomen of both sexes often castaneous. Pilosity on body as in *C. celebensis* but

underside of head, with exception of postclypeus, more thickly covered with long silvery hairs.

Head: Postclypeus more globular than in *C. celebensis*; colour dark castaneous with medial, oval, light ochreous to light brownish spot. A black spot encloses the ocelli and a pair of large dark spots is situated between ocelli and eyes. Rostrum dark brown to apex and just reaching posterior margin of hind coxae.

Thorax: Pronotum with an, often indistinct, marking consisting of a pair of central fasciae, a pair of spots between the two pairs of oblique fissures and a dark coloration in these oblique fissures. Mesonotum shiny and often darker brown than pronotum but without discernible marking.

Tegmina and wings: Hyaline. Colour of venation of tegmen as in *C. celebensis*. Transverse veins of 2nd and 3rd apical areas of tegmen infuscated. A distinct brown spot is found at apex of anterior longitudinal veins of 2nd apical area, while some specimens have two or three more, very small, marginal spots. Basal membranes of tegmina and wings vividly green. Legs as in *C. celebensis*.

Male. Operculum (fig. 6): Triangular, dark brown, with an almost straight medial margin, a weakly convex lateral margin, and an about rectangular apex reaching just beyond posterior margin of abdominal segment 2.

Abdomen: Castaneous brown to black brown dorsally and somewhat lighter ventrally, very long, 1.3-1.5 times as long as head and thorax together.



Timbal covering distinctly broader than in *C. celebensis*, leaving a smaller part of interior timbal cavity exposed; lateral margin of timbal covering straight or very slightly convex.

Genitalia (fig. 4): Pygofer somewhat less than twice as long as wide, widest at half-length. Lateral margins of apical half of pygofer and curved ridges forming sides of basal pygofer cup strongly pronounced. Uncus with two lobes narrowing to apices. Apex of uncus lobe bidentate, medial teeth of both lobes juxtaposed and slightly recurved, lateral tooth triangular.

Female. Operculum: Semicircular shaped and with slightly convex surface covered with scattered pilosity. Operculum reaching just beyond posterior margin of abdominal segment 2.

Abdomen: Castaneous brown dorsally and somewhat lighter ventrally. Dorsal surface scattered silvery pilose. Abdomen 0.9-1.2 times as long as head and thorax together.

Measurements in mm (10 ♂, 8 ♀). Body length ♂ 51.5-56.0 ( $53.8 \pm 1.5$ ), ♀ 36.6-49.2 ( $42.5 \pm 4.8$ ); head width ♂ 15.2-15.8 ( $15.5 \pm 0.3$ ), ♀ 12.7-15.8 ( $14.8 \pm 1.1$ ); pronotum width ♂ 15.5-17.5 ( $16.2 \pm 0.6$ ), ♀ 12.3-17.1 ( $15.0 \pm 1.7$ ); tegmen length ♂ 51.0-66.2 ( $63.1 \pm 1.7$ ), ♀ 51.7-64.7 ( $57.6 \pm 4.6$ ).

### Distribution (fig. 7)

This species is an endemic of Borneo and recorded from lowland localities only.

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